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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,067	04/06/2001	Walter Jan August De Coster	PHQ99.010	2192

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EXAMINER

GUERRERO, MARIA F

ART UNIT PAPER NUMBER

2822

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,067

Applicant(s)

DE COSTER ET AL.

Examiner

Maria Guerrero

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This Office Action is in response to the Amendment filed August 14, 2003.

Claims 1-9 are pending.

Priority

2. This Application is a 371 of PCT/EP00/07519 filed August 2, 2000.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi (U.S. 5,739,573) in view of Lur et al. (U.S. 6,013,569).

Kawaguchi teaches forming spacers at the sides of a projecting polysilicon region, the spacers having a smaller isolation layer in contact with the projecting polysilicon region, and a larger isolation layer (Fig. 5B-5B, col. 10, lines 10-33). Kawaguchi discloses anisotropically etching at least the vertical portion of the smaller isolation layer to form a trench, the trench being between the larger isolation layer and the corresponding side of the projecting polysilicon region, and the depth of trench being equal to maximally half the height of the larger isolation layer and maximally half

Art Unit: 2822

the thickness of the larger isolation layer (Fig. 5C, col. 10, lines 35-50). Kawaguchi teaches subjecting the projecting polysilicon region to a silicidation process by directional depositing a metal layer capable of forming a metal silicide (Fig. 5D-5E, col. 10, lines 65-67, col. 11, lines 1-30).

Kawaguchi teaches an integrated circuit comprising lateral isolation regions formed at the sides of at least one projecting region of polysilicon (Fig. 5B, 7B). Kawaguchi shows each lateral region being composed of a smaller isolation layer and a larger isolation layer, each lateral isolation region comprising a vertical trench made in the smaller isolation layer (Fig. 5C, 7C). Kawaguchi teaches the integrated circuit comprising a metal silicide situated in the upper part of the polysilicon region (Fig. 5E, 7E).

Kawachi does not specifically show the depth of the trench being measured from a top of the larger isolation layer down to the smaller isolation layer. However, Lur et al. teaches forming the spacers having a smaller isolation layer in contact with the projecting polysilicon region and a larger isolation layer (Fig. 7-8, col. 8, lines 10-35). Lur et al. discloses isotropically etching at least the vertical portion of the smaller isolation layer to form a trench, the trench being less than the half the height of the larger isolation layer from the top of the larger isolation layer down to the smaller isolation layer (Fig. 8, col. 8, lines 45-65). Lur et al. teaches subjecting the projecting polysilicon region to a silicidation process by directional depositing a metal layer capable of forming a metal silicide (Fig. 9, col. 9, lines 3-15, 35-45).

Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kawaguchi reference by including the teaching of Lur et al. in order to avoid stress to the sidewalls of the polysilicon line (Lur et al., Abstract).

4. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiro Ida (JP 07-066406) (Translation).

Jiro Ida teaches an integrated circuit comprising lateral isolation regions formed at the sides of at least one projecting region of polysilicon (24) (Fig. 1c, paragraphs 0015-0016). Jiro Ida shows each lateral region being composed of a smaller isolation layer (26) and a larger isolation layer (28), each lateral isolation region comprising a vertical trench made in the smaller isolation layer (Fig. 1d-1e, paragraph 0017). Jiro Ida teaches the integrated circuit comprising a metal silicide (31, 49) situated in the upper part of the polysilicon region and having a planar surface that is higher than the larger isolation region (Fig. 1f, 3, paragraphs 0018-0024).

Regarding claims 6-9, Jiro Ida is silent about the depth of the trench. However, a person of ordinary skill in the art would recognize that the Jiro Ida's drawings implicitly disclosed the depth of the trench (Fig. 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to infer the depth of the trench being equal to maximally half the height of the larger isolation layer or at least $1/20^{\text{th}}$ of the height of the projecting region of the silicidized polysilicon in order to obtain low resistance.

Response to Arguments

5. Applicant's arguments filed August 8, 2003 have been fully considered but they are not persuasive. Claims 1-9 stand rejected.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., half the height of the larger isolation area) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The rejected claims recited "**maximally** half the height of the larger isolation area".

During examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In *re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) >; *MSM Investments Co. v. Carolwood Corp.*, 259 F.3d 1335, 1339-40, 59 USPQ2d 1856, 1859-60 (Fed. Cir. 2001).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argued that Kawachi does not disclose directional depositing. However, *Lur et al.* teaches directional depositing a metal layer (Fig. 9, col. 9, lines 3-15, 35-45).

In addition, Rideout (U.S. 4,144,101) (col. 3, lines 55-58) and Gonzalez et al. (U.S. 5,994,220) (col. 1, lines 25-27) are cited as evidence to show that Lur et al. disclosed a directional depositing process.

Furthermore, this is not an ipsissimis verbis test, i.e., identity of terminology is not required. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

Applicant argued that the drawings are not to scale. However, the references are silent about that. In addition, the description of the article pictured can be relied on, in combination with the drawings, for what they would reasonably teach one of ordinary skill in the art. In re Wright, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977).

Furthermore, the applicant fails to show the criticality of the trench depth." In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g). Therefore, the rejection is maintained.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2822

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 703-305-0162.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-49055. The fax phone numbers for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Maria Guerrero
Maria Guerrero
Patent Examiner
November 21, 2003